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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/741,535	12/19/2000	Takashi Kumamoto	042390.P9482	6360

7590

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EXAMINER

THAI, LUAN C

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/741,535

Applicant(s)

KUMAMOTO ET AL. 

Examiner

Luan Thai

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,20 and 33-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,20 and 33-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

Request for Continued Examination

A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/10/01 has been entered. An action on the RCE follows.

Claim Objections

1. Claims 1 and 35 are objected to because of the following informalities: the limitation "a first portion" recited in claim 1, line 11, and in claim 35, line 11, should be changed to --the first portion--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims **1, 20, and 33-36** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification, as originally filed, does not disclose that the entire length of the upper inner surface of the mold is coated with release film, as recited in claims 1, 20 and 35.

Claims **33, 34 and 36** are rejected since each includes the limitations of independent claims **1, 20, and 35**.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 33, 35 and 36, insofar as in compliance with 35 USC 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyajima (6,187,243 herein after called "Mi-243") in view of Miyajima (6,048,483 herein after called Mi-483).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1, 33, 35 and 36, Mi-243 teaches (see specifically figures 19) a method comprising: placing an incomplete flip chip package 10 into a bottom inner cavity of a bottom mold portion 20b, the incomplete chip package comprising a chip 12 and a substrate 10a electrically coupled using a flip-chip process (re-flowed solder bumps 13), the chip having a top surface facing the substrate, a bottom surface opposite the top surface, and one or more side surfaces between the top and bottom surfaces; mating an upper mold portion 20a with the lower mold portion 20b, the upper mold portion having an upper inner cavity, including an upper inner surface in which its length is coated with a release film 50, and the bottom surface of the chip butts against the upper inner surface, the upper and bottom inner cavities forming a mold inner cavity enclosing the incomplete flip-chip package, and forming a runner 38-40 between the upper and lower mold portions; injecting a predetermined amount of a liquid

Art Unit: 2827

resin into the mold inner cavity through the runner, the resin encapsulating all the side surfaces, and filling a gap between the top surface of the chip and the adjacent portion of the upper surface, encapsulating the re-flowed solder bumps; and curing the resin. Mi-243 teaches the release film 50 covers most of the length of the upper inner surface of the mold 20a (see figure 19) but not covers entire length of the upper inner surface of the mold.

The release film covering entire length of the inner surface of the mold, however, is conventional in the molding art, as taught by Mi-483 (note the release film 334 in Mi-483's figures 14-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process disclosed by Mi-243 by forming the release film entire length of the upper inner surface of the mold as being taught by Mi-483, since such structure of the release film in the mold is conventional (as disclosed by Mi-243) and the modification above is held to be within a general skill of a person in the art.

6. Claims 20 and 34, insofar as in compliance with 35 USC 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyajima (6,187,243 herein after called "Mi-243") in view of Miyajima (6,048,483 herein after called Mi-483) and further in view of Chia et al. (6,081,997 of record).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 20 and 34, the proposed device of Mi-243 and Mi-483 discloses all the limitations of the claimed invention as detailed above except for

Art Unit: 2827

the step of curing the liquid resin by maintaining the mold at an elevated temperature for a predetermined period of time, wherein the elevated temperature being equal to or greater than the cure temperature of the filled liquid resin for the predetermined period of time.

The step of curing the liquid resin by maintaining the mold at an elevated temperature, however, is conventional in the art, as disclosed by Chia et al (Col. 6, lines 40+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to cure the liquid resin by maintaining the mold at an elevated temperature as claimed since such resin cured method is conventional in the art as taught by Chia et al.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 3:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Art Unit: 2827

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Luan Thai

September 20, 2002


ALBERT W. PALADINI
PRIMARY EXAMINER